

ABSTRACT OF THE DISCLOSURE

An improved optical configuration for use in a gas monitoring system. The optical system uses a high numerical aperture lens that maximizes capture of relatively large angle rays, thereby increasing the measured signal at the infrared radiation detector. In one embodiment of the present invention, a half-ball-type lens is provided proximal to the infrared radiation source in the gas measurement system. To further increase the measured signal at the infrared radiation detector and allow more efficient capture of the larger angle rays, materials that are reflective in the infrared band of interest are used, so that the walls of the sample cell act as a hollow light pipe.